

Figure 1: Northern blot analysis of the expression of the cysteine proteinase (CcCP1) gene in different tissues of *Coffea arabica*.

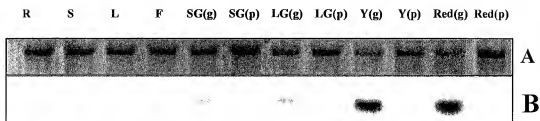


Figure 2A: Northern blot analysis of the expression of the Cysteine proteinase CcCP-1 gene in different tissues of *Coffea arabica*.

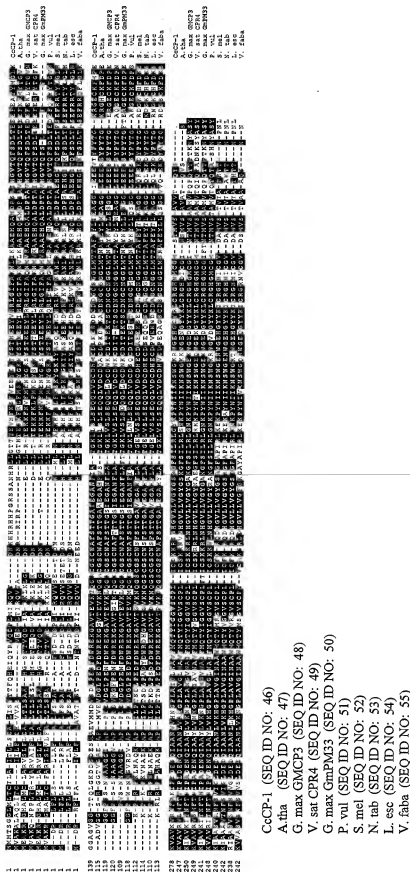


Figure 2B: Alignment of the full sequence of the protein encoded by CcCP-1 cDNA with other full-length cysteine proteinases available in the NCBI database.

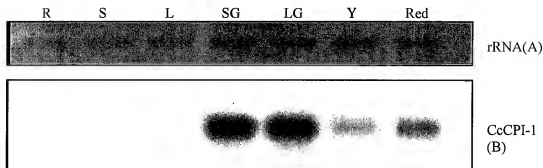


Figure 3: Northern blot analysis of the expression of the cysteine proteinase inhibitor (CcCPI-1) gene in different tissues of *Coffea arabica*.

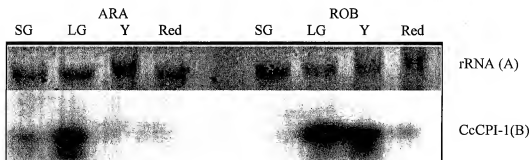


Figure 4: Northern blot analysis of the expression of the cysteine proteinase inhibitor gene (CcCPI-1) at different cherry development stages for *Coffea arabica* (ARA) and *Coffea canephora* (ROB).

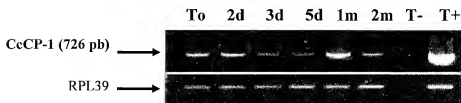


Figure 5. RT-PCR analysis of the expression of *CcCP-1* during *Coffea arabica* grain germination.

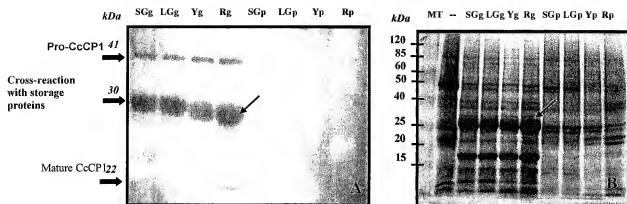


Figure 6A: Western-blot analysis of the expression of *CcCP1* protein (A).

1	M	A	R	P	S	S	L	I	L	P	S	E	L	I	E	I	A	L	E	S	T	L	Q	V	R	A	L	G	R	K	V	G	A	R	E	K	I	E	D	V	S	N	K	E	CPI-1
1	M	M	K	V	E	I	E	A	L	I	C	L	F	V	E	S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M. domest		
1	R	S	K	L	P	I	E	I	S	L	E	L	V	A	I	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Sunflower			
1	R	A	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R. obtusif					
1	R	L	K	V	S	L	V	L	S	L	G	E	L	V	I	R	V	I	P	S	A	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	A. thalian			
52	V	Q	E	L	G	E	V	C	S	E	Y	N	K	S	L	E	K	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	CPI-1			
40	V	Q	E	L	G	R	F	S	V	E	Y	N	R	Q	R	T	Q	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	M. domest			
39	T	C	L	G	S	P	S	D	E	Y	N	R	L	Q	R	T	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	Sunflower			
19	V	S	L	R	K	F	A	V	E	D	N	K	R	K	N	A	N	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	R. obtusif			
48	T	Q	L	G	R	S	L	V	E	Q	N	Q	R	Q	N	R	G	N	I	S	I	A	K	T	D	I	A	I	S	N	E	L	Q	E	S	K	V	S	Q	K	Q	V	V	A	A. thalian
93	G	T	K	V	L	K	N	K	A	F	S	S	G	V	R	K	V	I	D	E	V	V	R	P	W	V	H	I	R	P	Q	L	L	N	E	S	P	A	T	K	-	CPI-1			
81	G	T	K	V	L	K	N	K	A	F	S	S	G	V	R	K	V	I	D	E	V	V	R	P	W	V	H	I	R	P	Q	L	L	N	E	S	P	A	T	K	-	M. domest			
79	G	T	K	V	L	K	N	K	A	F	S	S	G	V	R	K	V	I	D	E	V	V	R	P	W	V	H	I	R	P	Q	L	L	N	E	S	P	A	T	K	-	Sunflower			
53	G	T	K	V	L	K	N	K	A	F	S	S	G	V	R	K	V	I	D	E	V	V	R	P	W	V	H	I	R	P	Q	L	L	N	E	S	P	A	T	K	-	R. obtusif			
99	G	L	K	V	L	K	N	K	A	F	S	S	G	V	R	K	V	I	D	E	V	V	R	P	W	V	H	I	R	P	Q	L	L	N	E	S	P	A	T	K	-	A. thalian			

CPI-1 (SEQ ID NO: 56)

M. domest (SEQ ID NO: 57)

Sunflower (SEQ ID NO: 58)

R. obtusif (SEQ ID NO: 59)

A. thaliana (SEQ ID NO: 60)

Figure 6B: Optimal alignment of the complete protein encoded by CcCPI-1 cDNA with other homologous full-length cysteine proteinases available in the NCBI.

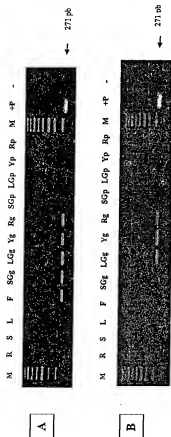


Figure 7. RT-PCR analysis of the expression of CcCP1-1 gene in different tissues of *Coffea arabica* (A) and *Coffea robusta* (B).

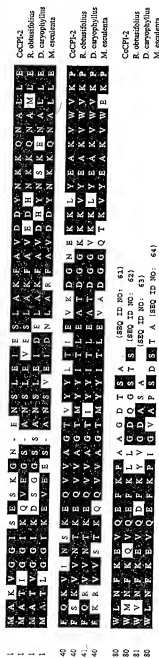


Figure 8: Optimal alignment of the complete protein encoded by CcCPI-2 cDNA with other homologous full-length cysteine proteinases available in the NCBI.

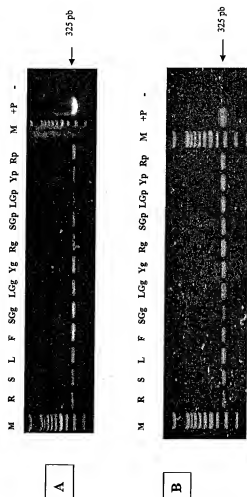
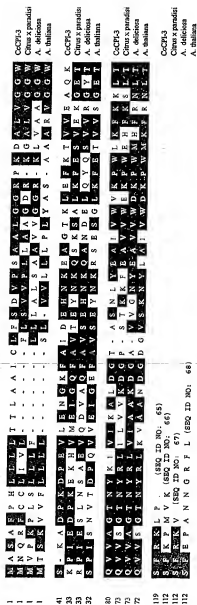


Figure 9: RT-PCR analysis of the expression of CcCPI-2 gene in different tissues of *Coffea arabica* COCA2 (A) and *Coffea robusta* FRT-32 (B).

Title: Polynucleotide Sequence Encoding Cysteine Protease for Modulation of Coffee Flavour Precursor Levels in Green Coffee Grains (as modified)
 Inventor: McCarthy, et al.
 App. No.: 10/559,986
 Docket No.: 112701-667
 REPLACEMENT DRAWING



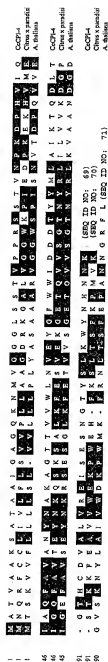


Figure 1: Optimal alignment of the complete protein encoded by CcCP1-4 cDNA with other homologous full-length cysteine proteinases available in the NCBI.

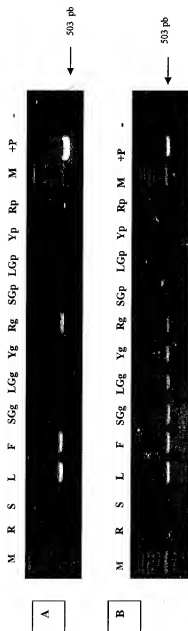


Figure 12: RT-PCR analysis of the expression of CcCPI-4 gene in different tissues of *Coffea arabica* CCA2 (Panel A) and of *Coffea robusta* FRT-32 (Panel B)

ARABICA

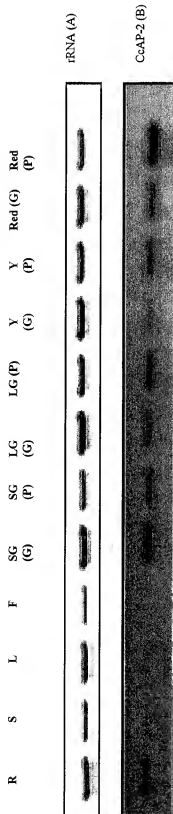


Figure 13: Northern blot analysis of the expression of the aspartic proteinase 2 (CcAP2) gene in different tissues of *Coffea arabica*.

REPLACEMENT DRAWING

Figure 14: cDNA sequence and its deduced amino acid sequence of CcCP-4. Lowercase: 5' and 3' non-translated regions; Uppercase: Open reading frame; Bold character: amino acid sequence; *: stop codon.

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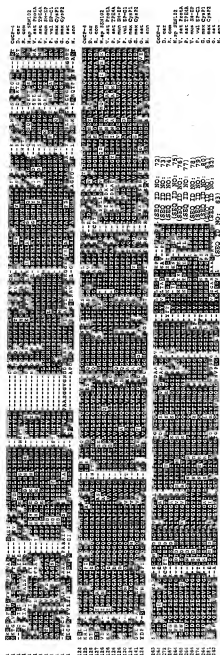


Figure 15: Alignment of the full sequence of the protein encoded by CcCP-4 cDNA with other full-length cysteine proteinases available in the NCBI database

1	GGCTACACCTCAATCTGATCTTATAGATTCCTGCTCCGAGCTCAATCTGGGAGTCGCTCAACATCTGGTAGACACTCGCTGATATGAA	KDEL -CGC
2	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
301	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
401	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
501	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
601	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
701	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
801	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
901	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
1001	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
1101	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
1201	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC
1289	ATGGGGAAAGGCTTCCCTTTTCCTGCTTATATGCTGTGATATGGCGGCTATATGACATCTGGAGATCTCAGAAAGAGATTTCCCTCTGGAGAAAT	KDEL -CGC

Figure 16. The full length cDNA sequence CcCP-4 KDDL and the partial cDNA sequence CcCP-4 (KDEL).

1 KNGKAFPAVVLAVLLVANSNETTERDLASESLMDLYERNSHRTVSDDLSKKERFAVFKANVHHTKKVNOKDFY CcCP-4 KDDI
1 KNGKAFPAVVLAVLLVANSNETTERDLASESLMDLYERNSHRTVSDDLSKKERFAVFKANVHHTKKVNOKDFY CcCP-4 KDDI
81 KTKLNSPADMTNHEFRFTSSKVKRYRTHGSRANTGFNMGKTEELPAQSVDRKKQGAIVGVKKQKCGSCWAFSTVGVGE CcCP-4 KDDI
1 KTKLNSPADMTNHEFRFTSSKVKRYRTHGSRANTGFNMGKTEELPAQSVDRKKQGAIVGVKKQKCGSCWAFSTVGVGE CcCP-4 KDDI
161 GIKTKTQLVSLSQELVDCETDREGCGGMENAYEFIKKSGGITTERTYPTAARDGSCDSKKMNAFAVTIDGHERVFP CcCP-4 KDDI
17 SINKIKTQLVSLSQELVDCETDREGCGGMENAYEFIKKSGGITTERTYPTAARDGSCDSKKMNAFAVTIDGHERVFP CcCP-4 KDDI
241 ARDENALRKAVANQPVSAIDASGSDMQFYSEGVYAGDSCKNELDHGVAVVGYGTAIDGTRKIWIIVKMSWGIGWELQQGYIR CcCP-4 KDDI
97 ARDENALRKAVANQPVSAIDASGSDMQFYSEGVYAGDSCKNELDHGVAVVGYGTAIDGTRKIWIIVKMSWGIGWELQQGYIR CcCP-4 KDDI
321 KARGVDAAEGGVCGGKMANASTPLKKSSHNFPSPRDFE (SEQ ID NO: 86) CcCP-4 KDDI
177 KARGVDAAEGGVCGGKMANASTPLKKSSHNFPSPRDFE (SEQ ID NO: 87) CcCP-4 KDDI

Decoration 'Decoration #1': Shade (with solid black) residues that match CcCP-4 KDDI, exactly. □

Figure 17. The complete open reading frame of CcCP-4 (KDDI) and the partial open reading frame of CcCP-4 (KDEL).

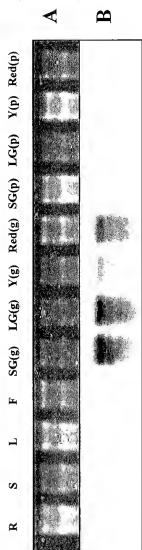


Figure 19. Northern blot analysis of the expression of the Cysteine proteinase CcCP-4 gene in different tissues of *Coffea arabica*.

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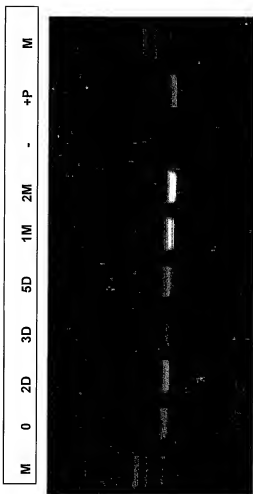
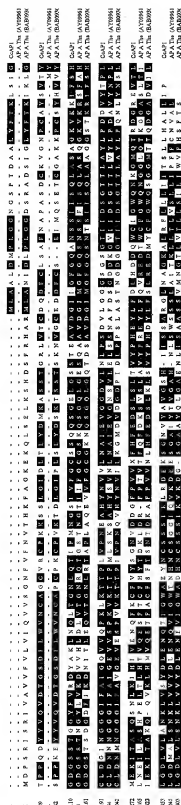


Figure 20. RT-PCR analysis of the expression of CcCP-4 in the whole grain during germination.



CcAP1 (SEQ ID NO: 88)
AP A Thin (AY099617) (SEQ ID NO: 89)
AP A thin (BAB09356) (SEQ ID NO: 90)

Figure 21: Optimal alignment of the complete protein encoded by CcAP-1 cDNA with other homologous full-length aspartic proteinase sequences available in the NCBI.

